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Turner, C. Alexander Jr.

<120> Novel Human Protocadherin Proteins and Polynucleotides Encoding the Same

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Leu	Pro	Gly	Thr	Gly	Pro	Leu	Gly	Phe	His	Phe	Thr	His	Ser	Ile	Tyr
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Asn	Ala	Thr	Val	Tyr	Glu	Asn	Ser	Ala	Ala	Arg	Thr	Tyr	Val	Asn	Ser
	50					55					60				
Gln	Ser	Arg	Met	Gly	Ile	Thr	Leu	Ile	Asp	Leu	Ser	Trp	Asp	Ile	Lys
65				70						75				80	
Tyr	Arg	Ile	Val	Ser	Gly	Asp	Glu	Glu	Gly	Phe	Phe	Lys	Ala	Glu	Glu
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Val	Ile	Ile	Ala	Asp	Phe	Cys	Phe	Leu	Arg	Ile	Arg	Thr	Lys	Gly	Gly
			100					105					110		
Asn	Ser	Ala	Ile	Leu	Asn	Arg	Glu	Ile	Gln	Asp	Asn	Tyr	Leu	Leu	Ile
		115					120					125			

Val	Lys	Gly	Ser	Val	Arg	Gly	Glu	Asp	Leu	Glu	Ala	Trp	Thr	Lys	Val	130	135	140
Asn	Ile	Gln	Val	Leu	Asp	Met	Asn	Asp	Leu	Arg	Pro	Leu	Phe	Ser	Pro	145	150	155
Thr	Thr	Tyr	Ser	Val	Thr	Ile	Ala	Glu	Ser	Thr	Pro	Leu	Arg	Thr	Ser	165	170	175
Val	Ala	Gln	Val	Thr	Ala	Thr	Asp	Ala	Asp	Ile	Gly	Ser	Asn	Gly	Glu	180	185	190
Phe	Tyr	Tyr	Tyr	Phe	Lys	Asn	Lys	Val	Asp	Leu	Phe	Ser	Val	His	Pro	195	200	205
Thr	Ser	Gly	Val	Ile	Ser	Leu	Ser	Gly	Arg	Leu	Asn	Tyr	Asp	Glu	Lys	210	215	220
Asn	Arg	Tyr	Asp	Leu	Glu	Ile	Leu	Ala	Val	Asp	Arg	Gly	Met	Lys	Leu	225	230	235
Tyr	Gly	Asn	Asn	Gly	Val	Ser	Ser	Thr	Ala	Lys	Leu	Tyr	Val	His	Ile	245	250	255
Glu	Arg	Ile	Asn	Glu	His	Ala	Pro	Thr	Ile	His	Val	Val	Thr	His	Val	260	265	270
Pro	Phe	Ser	Leu	Glu	Lys	Glu	Pro	Thr	Tyr	Ala	Val	Val	Thr	Val	Asp	275	280	285
Asp	Leu	Asp	Asp	Gly	Ala	Asn	Gly	Glu	Ile	Glu	Ser	Val	Ser	Ile	Val	290	295	300
Ala	Gly	Asp	Pro	Leu	Asp	Gln	Phe	Phe	Leu	Ala	Lys	Glu	Gly	Lys	Trp	305	310	315
Leu	Asn	Glu	Tyr	Lys	Ile	Lys	Glu	Arg	Lys	Gln	Ile	Asp	Trp	Glu	Ser	325	330	335
Phe	Pro	Tyr	Gly	Tyr	Asn	Leu	Thr	Leu	Gln	Ala	Lys	Asp	Lys	Gly	Ser	340	345	350
Pro	Gln	Lys	Cys	Ser	Ala	Leu	Lys	Ala	Val	Tyr	Ile	Gly	Asn	Pro	Thr	355	360	365
Arg	Asp	Thr	Val	Pro	Ile	Arg	Phe	Glu	Lys	Glu	Val	Tyr	Asp	Val	Ser	370	375	380
Ile	Ser	Glu	Phe	Ser	Pro	Pro	Gly	Val	Val	Val	Ala	Ile	Val	Lys	Leu	385	390	395
Ser	Pro	Glu	Pro	Ile	Asp	Val	Glu	Tyr	Lys	Leu	Ser	Pro	Gly	Glu	Asp	405	410	415
Ala	Val	Tyr	Phe	Lys	Ile	Asn	Pro	Arg	Ser	Gly	Leu	Ile	Val	Thr	Ala	420	425	430
Arg	Pro	Leu	Asn	Thr	Val	Lys	Lys	Glu	Val	Tyr	Lys	Leu	Glu	Val	Thr	435	440	445
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Ala	Asn	Asp	His	Thr	Pro	Glu	Phe	Gln	Gln	Pro	Leu	Tyr	Asp	Ala	Tyr	465	470	475
Val	Asn	Glu	Ser	Val	Pro	Val	Gly	Thr	Ser	Val	Leu	Thr	Val	Ser	Ala	485	490	495
Ser	Asp	Lys	Asp	Lys	Gly	Glu	Asn	Gly	Tyr	Ile	Thr	Tyr	Ser	Ile	Ala	500	505	510
Ser	Leu	Asn	Leu	Leu	Pro	Phe	Val	Ile	Asn	Gln	Phe	Thr	Gly	Val	Ile	515	520	525
Ser	Thr	Thr	Glu	Glu	Leu	Asp	Phe	Glu	Ser	Ser	Pro	Glu	Ile	Tyr	Arg	530	535	540
Phe	Ile	Val	Arg	Ala	Ser	Asp	Trp	Gly	Ser	Pro	Tyr	Arg	His	Glu	Ser	545	550	555
Glu	Val	Asn	Val	Thr	Ile	Arg	Ile	Gly	Asn	Val	Asn	Asp	Asn	Ser	Pro	565	570	575

Leu	Phe	Glu	Lys	Val	Ala	Cys	Gln	Gly	Val	Ile	Ser	Tyr	Asp	Phe	Pro
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Val	Gly	Gly	His	Ile	Thr	Ala	Val	Ser	Ala	Ile	Asp	Ile	Asp	Glu	Leu
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Glu	Leu	Val	Lys	Tyr	Lys	Ile	Ile	Ser	Gly	Asn	Glu	Leu	Gly	Phe	Phe
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Tyr	Leu	Asn	Pro	Asp	Ser	Gly	Val	Leu	Gln	Leu	Lys	Lys	Ser	Leu	Thr
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Asn	Ser	Gly	Ile	Lys	Asn	Gly	Asn	Phe	Ala	Leu	Arg	Ile	Thr	Ala	Thr
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Asp	Gly	Glu	Asn	Leu	Ala	Asp	Pro	Met	Ser	Ile	Asn	Ile	Ser	Val	Leu
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His	Gly	Lys	Val	Ser	Ser	Lys	Ser	Phe	Ser	Cys	Arg	Glu	Thr	Arg	Val
		675					680					685			
Ala	Gln	Lys	Leu	Ala	Glu	Lys	Leu	Leu	Ile	Lys	Ala	Lys	Ala	Asn	Gly
		690				695					700				
Lys	Leu	Asn	Leu	Glu	Asp	Gly	Phe	Leu	Asp	Phe	Tyr	Ser	Ile	Asn	Arg
705					710					715					720
Gln	Gly	Pro	Tyr	Phe	Asp	Lys	Ser	Phe	Pro	Ser	Asp	Val	Ala	Val	Lys
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Glu	Asp	Leu	Pro	Val	Gly	Ala	Asn	Ile	Leu	Lys	Ile	Lys	Ala	Tyr	Asp
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Val	Leu	Met	Pro	Met	Asp	Arg	Glu	His	Thr	Asp	Leu	Tyr	Leu	Leu	Asn
785					790					795					800
Ile	Thr	Ile	Tyr	Asp	Leu	Gly	Asn	Pro	Gln	Lys	Ser	Ser	Trp	Arg	Leu
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Gln	Asp	Ser	Tyr	Ser	Val	Asn	Ile	Leu	Glu	Ser	Ser	Gly	Ile	Gly	Thr
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Glu	Ile	Ile	Gln	Val	Glu	Ala	Arg	Asp	Lys	Asp	Leu	Gly	Ser	Asn	Gly
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Glu	Val	Thr	Tyr	Ser	Val	Leu	Thr	Asp	Thr	Gln	Gln	Phe	Ala	Ile	Asn
865				870						875					880
Ser	Ser	Thr	Gly	Ile	Val	Tyr	Val	Ala	Asp	Gln	Leu	Asp	Arg	Glu	Ser
			885						890					895	
Lys	Ala	Asn	Tyr	Ser	Leu	Lys	Ile	Glu	Ala	Arg	Asp	Lys	Ala	Glu	Ser
		900						905					910		
Gly	Gln	Gln	Leu	Phe	Ser	Val	Val	Thr	Leu	Lys	Val	Phe	Leu	Asp	Asp
		915					920					925			
Val															

Val Leu Pro Asp Thr Glu Ile Leu Gln Ile Glu Ala Thr Asp Arg Asp	1475	1480	1485
Glu Lys His Lys Leu Ser Tyr Thr Val His Ser Ser Ile Asp Ser Ile	1490	1495	1500
Ser Met Arg Lys Phe Arg Ile Asp Pro Ser Thr Gly Val Leu Tyr Thr	1505	1510	1515
Ala Glu Arg Leu Asp His Glu Ala Gln Asp Lys His Ile Leu Asn Ile	1525	1530	1535
Met Val Arg Asp Gln Glu Phe Pro Tyr Arg Arg Asn Leu Ala Arg Val	1540	1545	1550
Ile Val Asn Val Glu Asp Ala Asn Asp His Ser Pro Tyr Phe Thr Asn	1555	1560	1565
Pro Leu Tyr Glu Ala Ser Val Phe Glu Ser Ala Ala Leu Gly Ser Ala	1570	1575	1580
Val Leu Gln Val Thr Ala Leu Asp Lys Asp Lys Gly Glu Asn Ala Glu	1585	1590	1595
Leu Ile Tyr Thr Ile Glu Ala Gly Asn Thr Gly Asn Met Phe Lys Ile	1605	1610	1615
Glu Pro Val Leu Gly Ile Ile Thr Ile Cys Lys Glu Pro Asp Met Thr	1620	1625	1630
Thr Met Gly Gln Phe Val Leu Ser Ile Lys Val Thr Asp Gln Gly Ser	1635	1640	1645
Pro Pro Met Ser Ala Thr Ala Ile Val Arg Ile Ser Val Thr Met Ser	1650	1655	1660
Asp Asn Ser His Pro Lys Phe Ile His Lys Asp Tyr Gln Ala Glu Val	1665	1670	1675
Asn Glu Asn Val Asp Ile Gly Thr Ser Val Ile Leu Ile Ser Ala Ile	1685	1690	1695
Ser Gln Ser Thr Leu Ile Tyr Glu Val Lys Asp Gly Asp Ile Asn Gly	1700	1705	1710
Ile Phe Thr Ile Asn Pro Tyr Ser Gly Val Ile Thr Thr Gln Lys Ala	1715	1720	1725
Leu Asp Tyr Glu Arg Thr Ser Ser Tyr Gln Leu Ile Ile Gln Ala Thr	1730	1735	1740
Asn Met Ala Gly Met Ala Ser Asn Ala Thr Val Asn Ile Gln Ile Val	1745	1750	1755
Asp Glu Asn Asp Asn Ala Pro Val Phe Leu Phe Ser Gln Tyr Ser Gly	1765	1770	1775
Ser Leu Ser Glu Ala Ala Pro Ile Asn Ser Ile Val Arg Ser Leu Asp	1780	1785	1790
Asn Ser Pro Leu Val Ile Arg Ala Thr Asp Ala Asp Ser Asn Arg Asn	1795	1800	1805
Ala Leu Leu Val Tyr Gln Ile Val Glu Ser Thr Ala Lys Lys Phe Phe	1810	1815	1820
Thr Val Asp Ser Ser Thr Gly Ala Ile Arg Thr Ile Ala Asn Leu Asp	1825	1830	1835
His Glu Thr Ile Ala His Phe His Phe His Val His Val Arg Asp Ser	1845	1850	1855
Gly Ser Pro Gln Leu Thr Ala Glu Ser Pro Val Glu Val Asn Ile Glu	1860	1865	1870
Val Thr Asp Val Asn Asp Asn Pro Pro Val Phe Thr Gln Ala Val Phe	1875	1880	1885
Glu Thr Ile Leu Leu Leu Pro Thr Tyr Val Gly Val Glu Val Leu Lys	1890	1895	1900
Val Ser Ala Thr Asp Pro Asp Ser Glu Val Pro Pro Glu Leu Thr Tyr	1905	1910	1915
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Gly	Val	Leu	Thr	Ile	Lys	Asn	Asn	Asn	Leu	Ser	Lys	Asp	His	Tyr	Met
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Leu	Ile	Val	Lys	Val	Ser	Asp	Gly	Lys	Phe	Tyr	Ser	Thr	Ser	Met	Val
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Thr	Ile	Met	Val	Lys	Glu	Ala	Met	Asp	Ser	Gly	Leu	His	Phe	Thr	Gln
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Ser	Phe	Tyr	Ser	Thr	Ser	Ile	Ser	Glu	Asn	Asn	Thr	Asn	Ile	Thr	Lys
1985				1990				1995				2000			
Val	Ala	Ile	Val	Asn	Ala	Val	Gly	Asn	Arg	Leu	Asn	Glu	Pro	Leu	Lys
				2005				2010				2015			
Tyr	Ser	Ile	Leu	Asn	Pro	Gly	Asn	Lys	Phe	Lys	Ile	Lys	Ser	Thr	Ser
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Gly	Val	Ile	Gln	Thr	Thr	Gly	Val	Pro	Phe	Asp	Arg	Glu	Glu	Gln	Glu
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Leu	Tyr	Glu	Leu	Val	Val	Glu	Ala	Ser	Arg	Glu	Leu	Asp	His	Leu	Arg
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Val	Ala	Arg	Val	Val	Val	Arg	Val	Asn	Ile	Glu	Asp	Ile	Asn	Asp	Asn
2065				2070				2075				2080			
Ser	Pro	Val	Phe	Val	Gly	Leu	Pro	Tyr	Tyr	Ala	Ala	Val	Gln	Val	Asp
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Ala	Glu	Pro	Gly	Thr	Leu	Ile	Tyr	Gln	Val	Thr	Ala	Ile	Asp	Lys	Asp
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Lys	Gly	Pro	Asn	Gly	Glu	Val	Thr	Tyr	Val	Leu	Gln	Asp	Asp	Tyr	Gly
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Ala	Ser	Val	Asn	Glu	Asp	Ile	Arg	Met	Asn	Thr	Pro	Ile	Leu	Ser	Ile
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Gly	Asp	Pro	Phe	Lys	Gln	Phe	Asn	Ile	Asp	Phe	Asp	Thr	Gly	Val	Leu
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Lys	Val	Val	Ser	Pro	Leu	Asp	Tyr	Glu	Val	Thr	Ser	Ala	Tyr	Lys	Leu
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Thr	Ile	Arg	Ala	Ser	Asp	Ala	Leu	Thr	Gly	Ala	Arg	Ala	Glu	Val	Thr
				2260				2265				2270			
Val	Asp	Leu	Leu	Val	Asn	Asp	Val	Asn	Asp	Asn	Pro	Pro	Ile	Phe	Asp
				2275				2280				2285			
Gln	Pro	Thr	Tyr	Asn	Thr	Thr	Leu	Ser	Glu	Ala	Ser	Leu	Ile	Gly	Thr
				2290				2295				2300			
Pro	Val	Leu	Gln	Val	Val	Ser	Ile	Asp	Ala	Asp	Ser	Glu	Asn	Asn	Lys
2305				2310				2315				2320			
Met	Val	His	Tyr	Gln	Ile	Val	Gln	Asp	Thr	Tyr	Asn	Ser	Thr	Asp	Tyr
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Phe	His	Ile	Asp	Ser	Ser	Ser	Gly	Leu	Ile	Leu	Thr	Ala	Arg	Met	Leu
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Ser Gly Phe Pro Ser Leu Ser Ser Glu Val Leu Val His Ile Tyr Ile
2370 2375 2380

Ser Asp Val Asn Asp Asn Pro Pro Val Phe Asn Gln Leu Ile Tyr Glu
2385 2390 2395 2400

Ser Tyr Val Ser Glu Leu Ala Pro Arg Gly His Phe Val Thr Cys Val
2405 2410 2415

Gln Ala Ser Asp Ala Asp Ser Ser Asp Phe Asp Arg Leu Glu Tyr Ser
2420 2425 2430

Ile Leu Ser Gly Asn Asp Arg Thr Ser Phe Leu Met Asp Ser Lys Ser
2435 2440 2445

Gly Val Ile Thr Leu Ser Asn His Arg Lys Gln Arg Met Glu Pro Leu
2450 2455 2460

Tyr Ser Leu Asn Val Ser Val Ser Asp Gly Leu Phe Thr Ser Thr Ala
2465 2470 2475 2480

Gln Val His Ile Arg Val Leu Gly Ala Asn Leu Tyr Ser Pro Ala Phe
2485 2490 2495

Ser Gln Ser Thr Tyr Val Ala Glu Val Arg Glu Asn Val Ala Ala Gly
2500 2505 2510

Thr Lys Val Ile His Val Arg Ala Thr Asp Gly Asp Pro Gly Thr Tyr
2515 2520 2525

Gly Gln Ile Ser Tyr Ala Ile Ile Asn Asp Phe Ala Lys Asp Arg Phe
2530 2535 2540

Leu Ile Asp Ser Asn Gly Gln Val Ile Thr Thr Glu Arg Leu Asp Arg
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Glu Asn Pro Leu Glu Gly Asp Val Ser Ile Phe Val Arg Ala Leu Asp
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Gly Gly Gly Arg Thr Thr Phe Cys Thr Val Arg Val Ile Val Val Asp
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Glu Asn Asp Asn Ala Pro Gln Phe Met Thr Val Glu Tyr Arg Ala Ser
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Val Arg Ala Asp Val Gly Arg Gly His Leu Val Thr Gln Val Gln Ala
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Ile Asp Pro Asp Asp Gly Ala Asn Ser Arg Ile Thr Tyr Ser Leu Tyr
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Ser Glu Ala Ser Val Ser Val Ala Asp Leu Leu Glu Ile Asp Pro Asp
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Asn Gly Trp Met Val Thr Lys Gly Asn Phe Asn Gln Leu Lys Asn Thr
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Val Leu Ser Phe Phe Val Lys Ala Val Asp Gly Gly Ile Pro Val Lys
2675 2680 2685

His Ser Leu Ile Pro Val Tyr Ile His Val Leu Pro Pro Glu Thr Phe
2690 2695 2700

Leu Pro Ser Phe Thr Gln Ser Gln Tyr Ser Phe Thr Ile Ala Glu Asp
2705 2710 2715 2720

Thr Ala Ile Gly Ser Thr Val Asp Thr Leu Arg Ile Leu Pro Ser Gln
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Asn Val Trp Phe Ser Thr Val Asn Gly Glu Arg Pro Glu Asn Asn Lys
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Gly Gly Val Phe Val Ile Glu Gln Thr Gly Thr Ile Lys Leu Asp
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Lys Arg Leu Asp Arg Glu Thr Ser Pro Ala Phe His Phe Lys Val Ala
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Ala Thr Ile Pro Leu Asp Lys Val Asp Ile Val Phe Thr Val Asp Val
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Asp Ile Lys Val Leu Asp Leu Asn Asp Asn Lys Pro Val Phe Glu Thr
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Ser Ser Tyr Asp Thr Ile Ile Met Glu Gly Met Pro Val Gly Thr Lys
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Leu Thr Gln Val Arg Ala Ile Asp Met Asp Trp Gly Ala Asn Gly Gln
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Val Thr Tyr Ser Leu His Ser Asp Ser Gln Pro Glu Lys Val Met Glu
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Ala Phe Asn Ile Asp Ser Asn Thr Gly Trp Ile Ser Thr Leu Lys Asp
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Leu Asp His Glu Thr Asp Pro Thr Phe Thr Phe Ser Val Val Ala Ser
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Asp Leu Gly Glu Ala Phe Ser Leu Ser Ser Thr Ala Leu Val Ser Val
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Tyr Arg Gly Asn Val Lys Glu Ser Asp Pro Pro Gly Glu Val Val Ala
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Val Leu Ser Thr Trp Asp Arg Asp Thr Ser Asp Val Asn Arg Gln Val
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Ser Tyr His Ile Thr Gly Gly Asn Pro Arg Gly Arg Phe Ala Leu Gly
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Asp Ile Gly Ser Asn Gly Tyr Ile Arg Tyr Ser Leu Tyr Gly Ser Gly
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Asn Ser Glu Phe Phe Leu Asp Pro Glu Ser Gly Glu Leu Lys Thr Leu
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Ala Leu Leu Asp Arg Glu Arg Ile Pro Val Tyr Ser Leu Met Ala Lys
3090 3095 3100
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gaccgggaac	gggtgtcttg	atactctctg	cttgtccagg	ccgtagacag	tggcattcct	10260
gcaatgtcat	caactgcaac	tgtcaacatt	gatatctctg	atgtgaatga	caacagcccg	10320
gtgtttacac	ctgccaaacta	tactgtctgt	attcaggaaa	ataagccagt	gggcaccagc	10380
atcttgagc	tgggtgtgac	agacagagac	tcctttcaca	atgggcctcc	cttttcattc	10440
tctattttgt	cgggaaatga	agaggaggag	tttgtgttg	accctcatgg	gatcttgagg	10500
tcggctgtgg	tcttccagca	cacagagtct	ctggaatacg	tgttgtgtgt	ccaggcaaag	10560
gattcaggca	aaccccagca	agtttctcac	acttacatcc	gcgtgcgagt	cattgaggaa	10620
agcaccacac	agcccacagc	cattcccctg	gaaattttca	ttgtcaccat	ggaggatgac	10680
tttctgtgtg	gggtcattgg	gaagattcat	gccacagatc	aagacatgta	tgatgtgtc	10740
acatttgccc	tgaaatcgga	gcagaaaagc	ttattttaaag	tgaacagtca	cgatgggaaa	10800
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ctgcagaaca	ctgtcaccat	ccgctttgaa	aatgtgtccc	ctgaggactt	cgtggggctg	10980
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ctgcgcatca	tcagcatcca	gcccgtggca	ggcaccaacc	aactggacat	gctgtttgcg	11100
gtggagatgc	acagcagcga	gttctacaag	ccagcctacc	tgatccagaa	gctgtccaat	11160
gctagaagac	acctggagaa	tatcatgcgc	atctcagcca	tcttgagagaa	gaactgtctc	11220
gggctggact	gtcaggaaaca	gcattgtgag	caaggcttgt	cactcgattc	ccacgcgctc	11280
atgacctaca	gcacggctcg	catcagcttt	gtgtgtccgc	gtttctacag	gaacgtgcgt	11340
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tacatcaaat	atcggtcttc	tgaataatagc	aaagaagagg	atttcaaact	agctctgcgt	11580
cttcgaacac	tgcaaaagcaa	tgggattata	atgtacacca	gagcaaatcc	ctgcataatt	11640
ctgaagattg	tggatggcaa	gctgtggttc	cagctggact	gcggcagcgg	ccctggaatc	11700
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aaccgcaatt	tcacgagcct	gtccctggat	gacagctacg	tggagcggcg	ccgggcgccc	11820
ctctacttcc	agacgctgag	cactgagagt	agcatctact	tcggcgccct	ggtgcaagcg	11880
gataacatcc	gcagcctgac	tgacacgcgg	gtcacgcagg	tgctcagcgg	cttccagggc	11940
tgcttgact	cgggtgatact	gaataacaat	gagctgccgc	tgagaacaa	gcgcagcagc	12000

1025											1030											1035											1040
Asp	Phe	Ala	Val	Val	Gly	Ser	Val	Lys	Glu	Asn	Ser	Arg	Ile	Gly	Thr																		
										1045											1050											1055	
Ser	Val	Leu	Gln	Val	Thr	Ala	Arg	Asp	Glu	Asp	Ser	Gly	Arg	Asp	Gly																		
										1060											1065											1070	
Glu	Ile	Gln	Tyr	Ser	Ile	Arg	Asp	Gly	Ser	Gly	Leu	Gly	Arg	Phe	Ser																		
										1075											1080											1085	
Ile	Asp	Asp	Glu	Ser	Gly	Val	Ile	Thr	Ala	Ala	Asp	Ile	Leu	Asp	Arg																		
										1090											1095											1100	
Glu	Thr	Met	Gly	Ser	Tyr	Trp	Leu	Thr	Val	Tyr	Ala	Thr	Asp	Arg	Gly																		
										1105											1110											1115	
Val	Val	Pro	Leu	Tyr	Ser	Thr	Ile	Glu	Val	Tyr	Ile	Glu	Val	Glu	Asp																		
										1125											1130											1135	
Val	Asn	Asp	Asn	Ala	Pro	Leu	Thr	Ser	Glu	Pro	Ile	Tyr	Tyr	Pro	Val																		
										1140											1145											1150	
Val	Met	Glu	Asn	Ser	Pro	Lys	Asp	Val	Ser	Val	Ile	Gln	Ile	Gln	Ala																		
										1155											1160											1165	
Glu	Asp	Pro	Asp	Ser	Ser	Ser	Asn	Glu	Lys	Leu	Thr	Tyr	Arg	Ile	Thr																		
										1170											1175											1180	
Ser	Gly	Asn	Pro	Gln	Asn	Phe	Phe	Ala	Ile	Asn	Ile	Lys	Thr	Gly	Leu																		
										1185											1190											1195	
Ile	Thr	Thr	Thr	Ser	Arg	Lys	Leu	Asp	Arg	Glu	Gln	Gln	Ala	Glu	His																		
										1205											1210											1215	
Phe	Leu	Glu	Val	Thr	Val	Thr	Asp	Gly	Gly	Pro	Ser	Pro	Lys	Gln	Ser																		
										1220											1225											1230	
Thr	Ile	Trp	Val	Val	Val	Gln	Val	Leu	Asp	Glu	Asn	Asp	Asn	Lys	Pro																		
										1235											1240											1245	
Gln	Phe	Pro	Glu	Lys	Val	Tyr	Gln	Ile	Lys	Leu	Pro	Glu	Arg	Asp	Arg																		
										1250											1255											1260	
Lys	Lys	Arg	Gly	Glu	Pro	Ile	Tyr	Arg	Ala	Phe	Ala	Phe	Asp	Arg	Asp																		
										1265											1270											1275	
Glu	Gly	Pro	Asn	Ala	Glu	Ile	Ser	Tyr	Ser	Ile	Val	Asp	Gly	Asn	Asp																		
										1285											1290											1295	
Asp	Gly	Lys	Phe	Phe	Ile	Asp	Pro	Lys	Thr	Gly	Met	Val	Ser	Ser	Arg																		
										1300											1305											1310	
Lys	Gln	Phe	Thr	Ala	Gly	Ser	Tyr	Asp	Ile	Leu	Thr	Ile	Lys	Ala	Val																		
										1315											1320											1325	
Asp	Asn	Gly	Arg	Pro	Gln	Lys	Ser	Ser	Thr	Ala	Arg	Leu	His	Ile	Glu																		
										1330											1335											1340	
Trp	Ile	Lys	Lys	Pro	Pro	Ser	Pro	Ile	Pro	Leu	Thr	Phe	Asp	Glu																			
										1345											1350											1355	
Pro	Phe	Tyr	Asn	Phe	Thr	Val	Met	Glu	Ser	Asp	Arg	Val	Thr	Glu	Ile																		
										1365											1370											1375	
Val	Gly	Val	Val	Ser	Val	Gln	Pro	Ala	Asn	Thr	Pro	Leu	Trp	Phe	Asp																		
										1380											1385											1390	
Ile	Val	Gly	Gly	Asn	Phe	Asp	Ser	Ala	Phe	Asp	Ala	Glu	Lys	Gly	Val																		
										1395											1400											1405	
Gly	Thr	Ile	Val	Ile	Ala	Lys	Pro	Leu	Asp	Ala	Glu	Gln	Arg	Ser	Ile																		

1475	1480	1485
Leu Ser Tyr Thr Val His Ser Ser Ile Asp Ser Ile Ser Met Arg Lys		
1490	1495	1500
Phe Arg Ile Asp Pro Ser Thr Gly Val Leu Tyr Thr Ala Glu Arg Leu		
1505	1510	1515
Asp His Glu Ala Gln Asp Lys His Ile Leu Asn Ile Met Val Arg Asp		1520
1525	1530	1535
Gln Glu Phe Pro Tyr Arg Arg Asn Leu Ala Arg Val Ile Val Asn Val		
1540	1545	1550
Glu Asp Ala Asn Asp His Ser Pro Tyr Phe Thr Asn Pro Leu Tyr Glu		
1555	1560	1565
Ala Ser Val Phe Glu Ser Ala Ala Leu Gly Ser Ala Val Leu Gln Val		
1570	1575	1580
Thr Ala Leu Asp Lys Asp Lys Gly Glu Asn Ala Glu Leu Ile Tyr Thr		
1585	1590	1595
Ile Glu Ala Gly Asn Thr Gly Asn Met Phe Lys Ile Glu Pro Val Leu		1600
1605	1610	1615
Gly Ile Ile Thr Ile Cys Lys Glu Pro Asp Met Thr Thr Met Gly Gln		
1620	1625	1630
Phe Val Leu Ser Ile Lys Val Thr Asp Gln Gly Ser Pro Pro Met Ser		
1635	1640	1645
Ala Thr Ala Ile Val Arg Ile Ser Val Thr Met Ser Asp Asn Ser His		
1650	1655	1660
Pro Lys Phe Ile His Lys Asp Tyr Gln Ala Glu Val Asn Glu Asn Val		
1665	1670	1675
Asp Ile Gly Thr Ser Val Ile Leu Ile Ser Ala Ile Ser Gln Ser Thr		
1685	1690	1695
Leu Ile Tyr Glu Val Lys Asp Gly Asp Ile Asn Gly Ile Phe Thr Ile		
1700	1705	1710
Asn Pro Tyr Ser Gly Val Ile Thr Thr Gln Lys Ala Leu Asp Tyr Glu		
1715	1720	1725
Arg Thr Ser Ser Tyr Gln Leu Ile Ile Gln Ala Thr Asn Met Ala Gly		
1730	1735	1740
Met Ala Ser Asn Ala Thr Val Asn Ile Gln Ile Val Asp Glu Asn Asp		
1745	1750	1755
Asn Ala Pro Val Phe Leu Phe Ser Gln Tyr Ser Gly Ser Leu Ser Glu		
1765	1770	1775
Ala Ala Pro Ile Asn Ser Ile Val Arg Ser Leu Asp Asn Ser Pro Leu		
1780	1785	1790
Val Ile Arg Ala Thr Asp Ala Asp Ser Asn Arg Asn Ala Leu Leu Val		
1795	1800	1805
Tyr Gln Ile Val Glu Ser Thr Ala Lys Lys Phe Phe Thr Val Asp Ser		
1810	1815	1820
Ser Thr Gly Ala Ile Arg Thr Ile Ala Asn Leu Asp His Glu Thr Ile		
1825	1830	1835
Ala His Phe His Phe His Val His Val Arg Asp Ser Gly Ser Pro Gln		
1845	1850	1855
Leu Thr Ala Glu Ser Pro Val Glu Val Asn Ile Glu Val Thr Asp Val		
1860	1865	1870
Asn Asp Asn Pro Pro Val Phe Thr Gln Ala Val Phe Glu Thr Ile Leu		
1875	1880	1885
Leu Leu Pro Thr Tyr Val Gly Val Glu Val Leu Lys Val Ser Ala Thr		
1890	1895	1900
Asp Pro Asp Ser Glu Val Pro Pro Glu Leu Thr Tyr Ser Leu Met Glu		
1905	1910	1915
Gly Ser Leu Asp His Phe Leu Ile Asp Ser Asn Ser Gly Val Leu Thr		1920

				1925						1930						1935		
Ile	Lys	Asn	Asn	Asn	Leu	Ser	Lys	Asp	His	Tyr	Met	Leu	Ile	Val	Lys			
				1940					1945					1950				
Val	Ser	Asp	Gly	Lys	Phe	Tyr	Ser	Thr	Ser	Met	Val	Thr	Ile	Met	Val			
		1955						1960						1965				
Lys	Glu	Ala	Met	Asp	Ser	Gly	Leu	His	Phe	Thr	Gln	Ser	Phe	Tyr	Ser			
	1970						1975						1980					
Thr	Ser	Ile	Ser	Glu	Asn	Asn	Thr	Asn	Ile	Thr	Lys	Val	Ala	Ile	Val			
1985					1990					1995						2000		
Asn	Ala	Val	Gly	Asn	Arg	Leu	Asn	Glu	Pro	Leu	Lys	Tyr	Ser	Ile	Leu			
				2005				2010						2015				
Asn	Pro	Gly	Asn	Lys	Phe	Lys	Ile	Lys	Ser	Thr	Ser	Gly	Val	Ile	Gln			
		2020						2025						2030				
Thr	Thr	Gly	Val	Pro	Phe	Asp	Arg	Glu	Glu	Gln	Glu	Leu	Tyr	Glu	Leu			
		2035						2040						2045				
Val	Val	Glu	Ala	Ser	Arg	Glu	Leu	Asp	His	Leu	Arg	Val	Ala	Arg	Val			
		2050						2055						2060				
Val	Val	Arg	Val	Asn	Ile	Glu	Asp	Ile	Asn	Asp	Asn	Ser	Pro	Val	Phe			
2065				2070					2075						2080			
Val	Gly	Leu	Pro	Tyr	Tyr	Ala	Ala	Val	Gln	Val	Asp	Ala	Glu	Pro	Gly			
				2085				2090						2095				
Thr	Leu	Ile	Tyr	Gln	Val	Thr	Ala	Ile	Asp	Lys	Asp	Lys	Gly	Pro	Asn			
		2100						2105						2110				
Gly	Glu	Val	Thr	Tyr	Val	Leu	Gln	Asp	Asp	Tyr	Gly	His	Phe	Glu	Ile			
	2115						2120						2125					
Asn	Pro	Asn	Ser	Gly	Asn	Val	Ile	Leu	Lys	Glu	Ala	Phe	Asn	Ser	Asp			
	2130						2135						2140					
Leu	Ser	Asn	Ile	Glu	Tyr	Gly	Val	Thr	Ile	Leu	Ala	Lys	Asp	Gly	Gly			
2145				2150					2155						2160			
Lys	Pro	Ser	Leu	Ser	Thr	Ser	Val	Glu	Leu	Pro	Ile	Thr	Ile	Val	Asn			
		2165						2170						2175				
Lys	Ala	Met	Pro	Val	Phe	Asp	Lys	Pro	Phe	Tyr	Thr	Ala	Ser	Val	Asn			
		2180						2185						2190				
Glu	Asp	Ile	Arg	Met	Asn	Thr	Pro	Ile	Leu	Ser	Ile	Asn	Ala	Thr	Ser			
	2195						2200						2205					
Pro	Glu	Gly	Gln	Gly	Ile	Ile	Tyr	Ile	Ile	Ile	Asp	Gly	Asp	Pro	Phe			
	2210						2215						2220					
Lys	Gln	Phe	Asn	Ile	Asp	Phe	Asp	Thr	Gly	Val	Leu	Lys	Val	Val	Ser			
2225				2230					2235						2240			
Pro	Leu	Asp	Tyr	Glu	Val	Thr	Ser	Ala	Tyr	Lys	Leu	Thr	Ile	Arg	Ala			
		2245						2250						2255				
Ser	Asp	Ala	Leu	Thr	Gly	Ala	Arg	Ala	Glu	Val	Thr	Val	Asp	Leu	Leu			
		2260						2265						2270				
Val	Asn	Asp	Val	Asn	Asp	Asn	Pro	Pro	Ile	Phe	Asp	Gln	Pro	Thr	Tyr			
	2275						2280						2285					
Asn	Thr	Thr	Leu	Ser	Glu	Ala	Ser	Leu	Ile	Gly	Thr	Pro	Val	Leu	Gln			
	2290						2295						2300					
Val	Val	Ser	Ile	Asp	Ala	Asp	Ser	Glu	Asn	Asn	Lys	Met	Val	His	Tyr			
2305				2310					2315						2320			
Gln	Ile	Val	Gln	Asp														

2370					2375					2380					
Asp	Asn	Pro	Pro	Val	Phe	Asn	Gln	Leu	Ile	Tyr	Glu	Ser	Tyr	Val	Ser
2385					2390					2395					2400
Glu	Leu	Ala	Pro	Arg	Gly	His	Phe	Val	Thr	Cys	Val	Gln	Ala	Ser	Asp
				2405					2410						2415
Ala	Asp	Ser	Ser	Asp	Phe	Asp	Arg	Leu	Glu	Tyr	Ser	Ile	Leu	Ser	Gly
				2420				2425							2430
Asn	Asp	Arg	Thr	Ser	Phe	Leu	Met	Asp	Ser	Lys	Ser	Gly	Val	Ile	Thr
				2435				2440							2445
Leu	Ser	Asn	His	Arg	Lys	Gln	Arg	Met	Glu	Pro	Leu	Tyr	Ser	Leu	Asn
				2450				2455							2460
Val	Ser	Val	Ser	Asp	Gly	Leu	Phe	Thr	Ser	Thr	Ala	Gln	Val	His	Ile
2465					2470										2480
Arg	Val	Leu	Gly	Ala	Asn	Leu	Tyr	Ser	Pro	Ala	Phe	Ser	Gln	Ser	Thr
				2485					2490						2495
Tyr	Val	Ala	Glu	Val	Arg	Glu	Asn	Val	Ala	Ala	Gly	Thr	Lys	Val	Ile
				2500				2505							2510
His	Val	Arg	Ala	Thr	Asp	Gly	Asp	Pro	Gly	Thr	Tyr	Gly	Gln	Ile	Ser
				2515				2520							2525
Tyr	Ala	Ile	Ile	Asn	Asp	Phe	Ala	Lys	Asp	Arg	Phe	Leu	Ile	Asp	Ser
				2530				2535							2540
Asn	Gly	Gln	Val	Ile	Thr	Thr	Glu	Arg	Leu	Asp	Arg	Glu	Asn	Pro	Leu
2545					2550					2555					2560
Glu	Gly	Asp	Val	Ser	Ile	Phe	Val	Arg	Ala	Leu	Asp	Gly	Gly	Gly	Arg
					2565					2570					2575
Thr	Thr	Phe	Cys	Thr	Val	Arg	Val	Ile	Val	Val	Asp	Glu	Asn	Asp	Asn
				2580				2585							2590
Ala	Pro	Gln	Phe	Met	Thr	Val	Glu	Tyr	Arg	Ala	Ser	Val	Arg	Ala	Asp
				2595				2600							2605
Val	Gly	Arg	Gly	His	Leu	Val	Thr	Gln	Val	Gln	Ala	Ile	Asp	Pro	Asp
					2610			2615							2620
Asp	Gly	Ala	Asn	Ser	Arg	Ile	Thr	Tyr	Ser	Leu	Tyr	Ser	Glu	Ala	Ser
2625					2630					2635					2640
Val	Ser	Val	Ala	Asp	Leu	Leu	Glu	Ile	Asp	Pro	Asp	Asn	Gly	Trp	Met
				2645					2650						2655
Val	Thr	Lys	Gly	Asn	Phe	Asn	Gln	Leu	Lys	Asn	Thr	Val	Leu	Ser	Phe
				2660				2665							2670
Phe	Val	Lys	Ala	Val	Asp	Gly	Gly	Ile	Pro	Val	Lys	His	Ser	Leu	Ile
				2675				2680							2685
Pro	Val	Tyr	Ile	His	Val	Leu	Pro	Pro	Glu	Thr	Phe	Leu	Pro	Ser	Phe
					2690			2695							2700
Thr	Gln	Ser	Gln	Tyr	Ser	Phe	Thr	Ile	Ala	Glu	Asp	Thr	Ala	Ile	Gly
2705					2710					2715					2720
Ser	Thr	Val	Asp	Thr	Leu	Arg	Ile	Leu	Pro	Ser	Gln	Asn	Val	Trp	P

2820	2825	2830
Arg Ala Ile Asp Met Asp Trp Gly	Ala Asn Gly Gln Val Thr Tyr Ser	
2835	2840	2845
Leu His Ser Asp Ser Gln Pro Glu Lys Val Met Glu Ala Phe Asn Ile		
2850	2855	2860
Asp Ser Asn Thr Gly Trp Ile Ser Thr Leu Lys Asp Leu Asp His Glu		
2865	2870	2875
Thr Asp Pro Thr Phe Thr Phe Ser Val Val Ala Ser Asp Leu Gly Glu		
2885	2890	2895
Ala Phe Ser Leu Ser Ser Thr Ala Leu Val Ser Val Arg Val Thr Asp		
2900	2905	2910
Ile Asn Asp Asn Ala Pro Val Phe Ala Gln Glu Val Tyr Arg Gly Asn		
2915	2920	2925
Val Lys Glu Ser Asp Pro Pro Gly Glu Val Val Ala Val Leu Ser Thr		
2930	2935	2940
Trp Asp Arg Asp Thr Ser Asp Val Asn Arg Gln Val Ser Tyr His Ile		
2945	2950	2955
Thr Gly Gly Asn Pro Arg Gly Arg Phe Ala Leu Gly Leu Val Gln Ser		
2965	2970	2975
Glu Trp Lys Val Tyr Val Lys Arg Pro Leu Asp Arg Glu Glu Gln Asp		
2980	2985	2990
Ile Tyr Phe Leu Asn Ile Thr Ala Thr Asp Gly Leu Phe Val Thr Gln		
2995	3000	3005
Ala Met Val Glu Val Ser Val Ser Asp Val Asn Asp Asn Ser Pro Val		
3010	3015	3020
Cys Asp Gln Val Ala Tyr Thr Ala Leu Leu Pro Glu Asp Ile Pro Ser		
3025	3030	3035
Asn Lys Ile Ile Leu Lys Val Ser Ala Lys Asp Ala Asp Ile Gly Ser		
3045	3050	3055
Asn Gly Tyr Ile Arg Tyr Ser Leu Tyr Gly Ser Gly Asn Ser Glu Phe		
3060	3065	3070
Phe Leu Asp Pro Glu Ser Gly Glu Leu Lys Thr Leu Ala Leu Leu Asp		
3075	3080	3085
Arg Glu Arg Ile Pro Val Tyr Ser Leu Met Ala Lys Ala Thr Asp Gly		
3090	3095	3100
Gly Gly Arg Phe Cys Gln Ser Asn Ile His Leu Ile Leu Glu Asp Val		
3105	3110	3115
Asn Asp Asn Pro Pro Val Phe Ser Ser Asp His Tyr Asn Thr Cys Val		
3125	3130	3135
Tyr Glu Asn Thr Ala Thr Lys Ala Leu Leu Thr Arg Val Gln Ala Val		
3140	3145	3150
Asp Pro Asp Ile Gly Ile Asn Arg Lys Val Val Tyr Ser Leu Ala Asp		
3155	3160	3165
Ser Ala Gly Gly Val Phe Ser Ile Asp Ser Ser Ser Gly Ile Ile Ile		
3170	3175	3180
Leu Glu Gln Pro Leu Asp Arg Glu Gln Gln Ser Ser Tyr Asn Ile Ser		
3185	3190	3195
Val Arg Ala Thr Asp Gln Ser Pro Gly Gln Ser Leu Ser Ser Leu Thr		
3205	3210	3215
Thr Val Thr Ile Thr Val Leu Asp Ile Asn Asp Asn Pro Pro Val Phe		
3220	3225	3230
Glu Arg Arg Asp Tyr Leu Val Thr Val Pro Glu Asp Thr Ser Pro Gly		
3235	3240	3245
Thr Gln Val Leu Ala Val Phe Ala Thr Ser Lys Asp Ile Gly Thr Asn		
3250	3255	3260
Ala Glu Ile Thr Tyr Leu Ile Arg Ser Gly Asn Glu Gln Gly Lys Phe		

3265		3270		3275		3280
Lys Ile Asn Pro	Lys Thr Gly Gly Ile Ser Val Ser Glu Val	Leu Asp				
	3285		3290		3295	
Tyr Glu Leu Cys Lys Arg Phe Tyr Leu Val Val Glu Ala Lys Asp Gly						
	3300		3305		3310	
Gly Thr Pro Ala Leu Ser Ala Val Ala Thr Val Asn Ile Asn Leu Thr						
	3315		3320		3325	
Asp Val Asn Asp Asn Pro Pro Lys Phe Ser Gln Asp Val Tyr Ser Ala						
	3330		3335		3340	
Val Ile Ser Glu Asp Ala Leu Val Gly Asp Ser Val Ile Leu Leu Ile						
3345		3350		3355		3360
Ala Glu Asp Val Asp Ser Gln Pro Asn Gly Gln Ile His Phe Ser Ile						
	3365		3370		3375	
Val Asn Gly Asp Arg Asp Asn Glu Phe Thr Val Asp Pro Val Leu Gly						
	3380		3385		3390	
Leu Val Lys Val Lys Lys Lys Leu Asp Arg Glu Arg Val Ser Gly Tyr						
	3395		3400		3405	
Ser Leu Leu Val Gln Ala Val Asp Ser Gly Ile Pro Ala Met Ser Ser						
	3410		3415		3420	
Thr Ala Thr Val Asn Ile Asp Ile Ser Asp Val Asn Asp Asn Ser Pro						
3425		3430		3435		3440
Val Phe Thr Pro Ala Asn Tyr Thr Ala Val Ile Gln Glu Asn Lys Pro						
	3445		3450		3455	
Val Gly Thr Ser Ile Leu Gln Leu Val Val Thr Asp Arg Asp Ser Phe						
	3460		3465		3470	
His Asn Gly Pro Pro Phe Ser Phe Ser Ile Leu Ser Gly Asn Glu Glu						
	3475		3480		3485	
Glu Glu Phe Val Leu Asp Pro His Gly Ile Leu Arg Ser Ala Val Val						
	3490		3495		3500	
Phe Gln His Thr Glu Ser Leu Glu Tyr Val Leu Cys Val Gln Ala Lys						
3505		3510		3515		3520
Asp Ser Gly Lys Pro Gln Gln Val Ser His Thr Tyr Ile Arg Val Arg						
	3525		3530		3535	
Val Ile Glu Glu Ser Thr His Lys Pro Thr Ala Ile Pro Leu Glu Ile						
	3540		3545		3550	
Phe Ile Val Thr Met Glu Asp Asp Phe Pro Gly Gly Val Ile Gly Lys						
	3555		3560		3565	
Ile His Ala Thr Asp Gln Asp Met Tyr Asp Val Leu Thr Phe Ala Leu						
	3570		3575		3580	
Lys Ser Glu Gln Lys Ser Leu Phe Lys Val Asn Ser His Asp Gly Lys						
3585		3590		3595		3600
Ile Ile Ala Leu Gly Gly Leu Asp Ser Gly Lys Tyr Val Leu Asn Val						
	3605		3610		3615	
Ser Val Ser Asp Gly Arg Phe Gln Val Pro Ile Asp Val Val Val His						
	3620		3625		3630	
Val Glu Gln Leu Val His Glu Met Leu Gln Asn Thr Val Thr Ile Arg						
	3635		3640		3645	
Phe Glu Asn Val Ser Pro Glu Asp Phe Val Gly Leu His Met His Gly						
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Phe Arg Arg Thr Leu Arg Asn Ala Val Leu Thr Gln Lys Gln Asp Ser						
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Val Ser Ala Thr Asp Pro Asp Ser Glu Val Pro Pro Glu Leu Thr Tyr		
1905	1910	1915
Ser Leu Met Glu Gly Ser Leu Asp His Phe Leu Ile Asp Ser Asn Ser		
1925	1930	1935
Gly Val Leu Thr Ile Lys Asn Asn Asn Leu Ser Lys Asp His Tyr Met		
1940	1945	1950
Leu Ile Val Lys Val Ser Asp Gly Lys Phe Tyr Ser Thr Ser Met Val		
1955	1960	1965
Thr Ile Met Val Lys Glu Ala Met Asp Ser Gly Leu His Phe Thr Gln		
1970	1975	1980
Ser Phe Tyr Ser Thr Ser Ile Ser Glu Asn Asn Thr Asn Ile Thr Lys		
1985	1990	1995
Val Ala Ile Val Asn Ala Val Gly Asn Arg Leu Asn Glu Pro Leu Lys		
2005	2010	2015
Tyr Ser Ile Leu Asn Pro Gly Asn Lys Phe Lys Ile Lys Ser Thr Ser		
2020	2025	2030
Gly Val Ile Gln Thr Thr Gly Val Pro Phe Asp Arg Glu Glu Gln Glu		
2035	2040	2045
Leu Tyr Glu Leu Val Val Glu Ala Ser Arg Glu Leu Asp His Leu Arg		
2050	2055	2060
Val Ala Arg Val Val Val Arg Val Asn Ile Glu Asp Ile Asn Asp Asn		
2065	2070	2075
Ser Pro Val Phe Val Gly Leu Pro Tyr Tyr Ala Ala Val Gln Val Asp		2080

2530	2535	2540
Leu Ile Asp Ser Asn Gly Gln Val Ile Thr Thr Glu Arg Leu Asp Arg		
2545	2550	2555
Glu Asn Pro Leu Glu Gly Asp Val Ser Ile Phe Val Arg Ala Leu Asp		2560
	2565	2570
Gly Gly Gly Arg Thr Thr Phe Cys Thr Val Arg Val Ile Val Val Asp		2575
	2580	2585
Glu Asn Asp Asn Ala Pro Gln Phe Met Thr Val Glu Tyr Arg Ala Ser		2590
	2595	2600
Val Arg Ala Asp Val Gly Arg Gly His Leu Val Thr Gln Val Gln Ala		2605
	2610	2615
Ile Asp Pro Asp Asp Gly Ala Asn Ser Arg Ile Thr Tyr Ser Leu Tyr		2620
2625	2630	2635
Ser Glu Ala Ser Val Ser Val Ala Asp Leu Leu Glu Ile Asp Pro Asp		2640
	2645	2650
Asn Gly Trp Met Val Thr Lys Gly Asn Phe Asn Gln Leu Lys Asn Thr		2655
	2660	2665
Val Leu Ser Phe Phe Val Lys Ala Val Asp Gly Gly Ile Pro Val Lys		2670
	2675	2680
His Ser Leu Ile Pro Val Tyr Ile His Val Leu Pro Pro Glu Thr Phe		2685
	2690	2695
Leu Pro Ser Phe Thr Gln Ser Gln Tyr Ser Phe Thr Ile Ala Glu Asp		2700
2705	2710	2715
Thr Ala Ile Gly Ser Thr Val Asp Thr Leu Arg Ile Leu Pro Ser Gln		2720
	2725	2730
Asn Val Trp Phe Ser Thr Val Asn Gly Glu Arg Pro Glu Asn Asn Lys		2735
	2740	2745
Gly Gly Val Phe Val Ile Glu Gln Glu Thr Gly Thr Ile Lys Leu Asp		2750
	2755	2760
Lys Arg Leu Asp Arg Glu Thr Ser Pro Ala Phe His Phe Lys Val Ala		2765
	2770	2775
Ala Thr Ile Pro Leu Asp Lys Val Asp Ile Val Phe Thr Val Asp Val		2780
2785	2790	2795
Asp Ile Lys Val Leu Asp Leu Asn Asp Asn Lys Pro Val Phe Glu Thr		2800
	2805	2810
Ser Ser Tyr Asp Thr Ile Ile Met Glu Gly Met Pro Val Gly Thr Lys		2815
	2820	2825
Leu Thr Gln Val Arg Ala Ile Asp Met Asp Trp Gly Ala Asn Gly Gln		2830
	2835	2840
Val Thr Tyr Ser Leu His Ser Asp Ser Gln Pro Glu Lys Val Met Glu		2845
	2850	2855
Ala Phe Asn Ile Asp Ser Asn Thr Gly Trp Ile Ser Thr Leu Lys Asp		2860
2865	2870	2875
Leu Asp His Glu Thr Asp Pro Thr Phe Thr Phe Ser Val Val Ala Ser		2880
	2885	2890
Asp Leu Gly Glu Ala Phe Ser Leu Ser Ser Thr Ala Leu Val Ser Val		2895
	2900	2905
Arg Val Thr Asp Ile Asn Asp Asn Ala Pro Val Phe Ala Gln Glu Val		2910
	2915	2920
Tyr Arg Gly Asn Val Lys Glu Ser Asp Pro Pro Gly Glu Val Val Ala		2925
	2930	2935
Val Leu Ser Thr Trp Asp Arg Asp Thr Ser Asp Val Asn Arg Gln Val		2940
2945	2950	2955
Ser Tyr His Ile Thr Gly Gly Asn Pro Arg Gly Arg Phe Ala Leu Gly		2960
	2965	2970
Leu Val Gln Ser Glu Trp Lys Val Tyr Val Lys Arg Pro Leu Asp Arg		2975

2980										2985					2990				
Glu	Glu	Gln	Asp	Ile	Tyr	Phe	Leu	Asn	Ile	Thr	Ala	Thr	Asp	Gly	Leu				
2995										3000					3005				
Phe	Val	Thr	Gln	Ala	Met	Val	Glu	Val	Ser	Val	Ser	Asp	Val	Asn	Asp				
3010										3015					3020				
Asn	Ser	Pro	Val	Cys	Asp	Gln	Val	Ala	Tyr	Thr	Ala	Leu	Leu	Pro	Glu				
3025										3030					3035				
Asp	Ile	Pro	Ser	Asn	Lys	Ile	Ile	Leu	Lys	Val	Ser	Ala	Lys	Asp	Ala				
3040										3045					3050				
Asp	Ile	Gly	Ser	Asn	Gly	Tyr	Ile	Arg	Tyr	Ser	Leu	Tyr	Gly	Ser	Gly				
3060										3065					3070				
Asn	Ser	Glu	Phe	Phe	Leu	Asp	Pro	Glu	Ser	Gly	Glu	Leu	Lys	Thr	Leu				
3075										3080					3085				
Ala	Leu	Leu	Asp	Arg	Glu	Arg	Ile	Pro	Val	Tyr	Ser	Leu	Met	Ala	Lys				
3090										3095					3100				
Ala	Thr	Asp	Gly	Gly	Gly	Arg	Phe	Cys	Gln	Ser	Asn	Ile	His	Leu	Ile				
3105										3110					3115				
Leu	Glu	Asp	Val	Asn	Asp	Asn	Pro	Pro	Val	Phe	Ser	Ser	Asp	His	Tyr				
3120										3125					3130				
Asn	Thr	Cys	Val	Tyr	Glu	Asn	Thr	Ala	Thr	Lys	Ala	Leu	Leu	Thr	Arg				
3140										3145					3150				
Val	Gln	Ala	Val	Asp	Pro	Asp	Ile	Gly	Ile	Asn	Arg	Lys	Val	Val	Tyr				
3155										3160					3165				
Ser	Leu	Ala	Asp	Ser	Ala	Gly	Gly	Val	Phe	Ser	Ile	Asp	Ser	Ser	Ser				
3170										3175					3180				
Gly	Ile	Ile	Ile	Leu	Glu	Gln	Pro	Leu	Asp	Arg	Glu	Gln	Gln	Ser	Ser				
3185										3190					3195				
Tyr	Asn	Ile	Ser	Val	Arg	Ala	Thr	Asp	Gln	Ser	Pro	Gly	Gln	Ser	Leu				
3205										3210					3215				
Ser	Ser	Leu	Thr	Thr	Val	Thr	Ile	Thr	Val	Leu	Asp	Ile	Asn	Asp	Asn				
3220										3225					3230				
Pro	Pro	Val	Phe	Glu	Arg	Arg	Asp	Tyr	Leu	Val	Thr	Val	Pro	Glu	Asp				
3235										3240					3245				
Thr	Ser	Pro	Gly	Thr	Gln	Val	Leu	Ala	Val	Phe	Ala	Thr	Ser	Lys	Asp				
3250										3255					3260				
Ile	Gly	Thr	Asn	Ala	Glu	Ile	Thr	Tyr	Leu	Ile	Arg	Ser	Gly	Asn	Glu				
3265										3270					3275				
Gln	Gly	Lys	Phe	Lys	Ile	Asn	Pro	Lys	Thr	Gly	Gly	Ile	Ser	Val	Ser				
3285										3290					3295				
Glu	Val	Leu	Asp	Tyr	Glu	Leu	Cys	Lys	Arg	Phe	Tyr	Leu	Val	Val	Glu				
3300										3305					3310				
Ala	Lys	Asp	Gly	Gly	Thr	Pro	Ala	Leu	Ser	Ala	Val	Ala	Thr	Val	Asn				
3315										3320					3325				
Ile	Asn	Leu	Thr	Asp	Val	Asn	Asp	Asn	Pro	Pro	Lys	Phe	Ser	Gln	Asp				
3330										3335					3340				
Val	Tyr	Ser	Ala	Val	Ile	Ser	Glu	Asp	Ala	Leu	Val	Gly	Asp	Ser	Val				
3345										3350					3355				
Ile	Leu	Leu	Ile	Ala	Glu	Asp	Val	Asp	Ser	Gln	Pro	Asn	Gly	Gln	Ile				
3365										3370					3375				
His	Phe	Ser	Ile	Val	Asn	Gly	Asp	Arg	Asp	Asn	Glu	Phe	Thr	Val	Asp				
3380										3385					3390				
Pro	Val	Leu	Gly	Leu	Val	Lys	Val	Lys	Lys	Lys	Leu	Asp	Arg	Glu	Arg				
3395										3400					3405				
Val	Ser	Gly	Tyr	Ser	Leu	Leu	Val	Gln	Ala	Val	Asp	Ser	Gly	Ile	Pro				
3410										3415					3420				
Ala																			

3875	3880	3885
Asp Gly Lys Leu Trp Phe Gln Leu Asp Cys Gly Ser Gly Pro Gly Ile		
3890	3895	3900
Leu Gly Ile Ser Gly Arg Ala Val Asn Asp Gly Ser Trp His Ser Val		
3905	3910	3915
Phe Leu Glu Leu Asn Arg Asn Phe Thr Ser Leu Ser Leu Asp Asp Ser		
3925	3930	3935
Tyr Val Glu Arg Arg Arg Ala Pro Leu Tyr Phe Gln Thr Leu Ser Thr		
3940	3945	3950
Glu Ser Ser Ile Tyr Phe Gly Ala Leu Val Gln Ala Asp Asn Ile Arg		
3955	3960	3965
Ser Leu Thr Asp Thr Arg Val Thr Gln Val Leu Ser Gly Phe Gln Gly		
3970	3975	3980
Cys Leu Asp Ser Val Ile Leu Asn Asn Asn Glu Leu Pro Leu Gln Asn		
3985	3990	3995
Lys Arg Ser Ser Phe Ala Glu Val Val Gly Leu Thr Glu Leu Lys Leu		
4005	4010	4015
Gly Cys Val Leu Tyr Pro Asp Ala Cys Lys Arg Ser Pro Cys Gln His		
4020	4025	4030
Gly Gly Ser Cys Thr Gly Leu Pro Ser Gly Gly Tyr Gln Cys Thr Cys		
4035	4040	4045
Leu Ser Gln Phe Thr Gly Arg Asn Cys Glu Ser Glu Ile Thr Ala Cys		
4050	4055	4060
Phe Pro Asn Pro Cys Arg Asn Gly Gly Ser Cys Asp Pro Ile Gly Asn		
4065	4070	4075
Thr Phe Ile Cys Asn Cys Lys Ala Gly Leu Thr Gly Val Thr Cys Glu		
4085	4090	4095
Glu Asp Ile Asn Glu Cys Glu Arg Glu Glu Cys Glu Asn Gly Gly Ser		
4100	4105	4110
Cys Val Asn Val Phe Gly Ser Phe Leu Cys Asn Cys Thr Pro Gly Tyr		
4115	4120	4125
Val Gly Gln Tyr Cys Gly Arg Pro Val Val Val Pro Asn Ile Gln Ala		
4130	4135	4140
Gly His Ser Tyr Val Gly Lys Glu Glu Leu Ile Gly Ile Ala Val Val		
4145	4150	4155
Leu Phe Val Ile Phe Ile Leu Val Val Leu Phe Ile Val Phe Arg Lys		
4165	4170	4175
Lys Val Phe Arg Lys Asn Tyr Ser Arg Asn Asn Ile Thr Leu Val Gln		
4180	4185	4190
Asp Pro Ala Thr Ala Ala Leu Leu Asn Lys Ser Asn Gly Ile Pro Phe		
4195	4200	4205
Arg Asn Leu Arg Gly Ser Gly Asp Gly Arg Asn Val Tyr Gln Glu Val		
4210	4215	4220
Gly Pro Pro Gln Val Pro Val Arg Pro Met Ala Tyr Thr Pro Cys Phe		
4225	4230	4235
Gln Ser Asp Ser Arg Ser Asn Leu Asp Lys Ile Val Asp Gly Leu Gly		
4245	4250	4255
Gly Glu His Gln Glu Met Thr Thr Phe His Pro Glu Ser Pro Arg Ile		
4260	4265	4270
Leu Thr Ala Arg Arg Gly Val Val Val Cys Ser Val Ala Pro Asn Leu		
4275	4280	4285
Pro Ala Val Ser Pro Cys Arg Ser Asp Cys Asp Ser Ile Arg Lys Asn		
4290	4295	4300
Gly Trp Asp Ala Gly Thr Glu Asn Lys Gly Val Asp Asp Pro Gly Glu		
4305	4310	4315
Val Thr Cys Phe Ala Gly Ser Asn Lys Gly Ser Asn Ser Glu Val Gln		

	4325		4330		4335
Ser Leu Ser Ser Phe Gln Ser Asp Ser Gly Asp Asp Asn Ala Ser Ile					
	4340		4345		4350
Val Thr Val Ile Gln Leu Val Asn Asn Val Val Asp Thr Ile Glu Asn					
	4355		4360		4365
Glu Val Ser Val Met Asp Gln Gly Gln Asn Tyr Asn Arg Ala Tyr His					
	4370		4375		4380
Trp Asp Thr Ser Asp Trp Met Pro Gly Ala Arg Leu Ser Asp Ile Glu					
	4385		4390		4395
					4400
Glu Val Pro Asn Tyr Glu Asn Gln Asp Gly Gly Ser Ala His Gln Gly					
	4405		4410		4415
Ser Thr Arg Glu Leu Glu Ser Asp Tyr Tyr Leu Gly Gly Tyr Asp Ile					
	4420		4425		4430
Asp Ser Glu Tyr Pro Pro Pro His Glu Glu Glu Phe Leu Ser Gln Asp					
	4435		4440		4445
Gln Leu Pro Pro Pro Leu Pro Glu Asp Phe Pro Asp Gln Tyr Glu Ala					
	4450		4455		4460
Leu Pro Pro Ser Gln Pro Val Ser Leu Ala Ser Thr Leu Ser Pro Asp					
	4465		4470		4475
					4480
Cys Arg Arg Arg Pro Gln Phe His Pro Ser Gln Tyr Leu Pro Pro His					
	4485		4490		4495
Pro Phe Pro Asn Glu Thr Asp Leu Val Gly Pro Pro Ala Ser Cys Glu					
	4500		4505		4510
Phe Ser Thr Phe Ala Val Ser Met Asn Gln Gly Thr Glu Pro Thr Gly					
	4515		4520		4525
Pro Ala Asp Ser Val Ser Leu Ser Leu His Asn Ser Arg Gly Thr Ser					
	4530		4535		4540
Ser Ser Asp Val Ser Ala Asn Cys Gly Phe Asp Asp Ser Glu Val Ala					
	4545		4550		4555
					4560
Met Ser Asp Tyr Glu Ser Val Gly Glu Leu Ser Leu Ala Ser Leu His					
	4565		4570		4575
Ile Pro Phe Val Glu Thr Gln His Gln Thr Gln Val					
	4580		4585		